Screencast: <u>08-disk-partitions-filesystem.webm</u> or <u>08-disk-partitions-filesystem.mp4</u>

REFERENCE LaUSAH Chapter 8, Storage TLCL Chapter 15, Storage Media

Hard Drives

- Types
 - IDE / ATA / PATA (two connectors, 40 or 80 pin)
 - o SATA
 - SSD
 - SCSI
 - SAS
 - Fiber Channel
 - USB, Firewire, eSATA
- Single disk
- Multiple disks
- Disk image file
- RAID 0, 1, 5, 10
 - hardware BIOS disk based
 - software mdadm disk or partition based
- NAS NFS, SMB (service oriented filesharing)
- SAN iSCSI, ATA over Ethernet (AoE)
- LVM lvm, system-config-lvm

Partitioning Applications

- fdisk fdisk -I (lists all drives seen) (gdisk or parted/gparted for GPT)
- sfdisk
 - sfdisk -d /dev/hda > hda.out
 - sfdisk /dev/hda < hda.out
- gdisk
- parted / gparted
- mount, umount
- Commercial products
 - Partition Magic
 - Partition Commander

Partitioning Schemes

PC hardware (with an MBR partition table) can have upto <u>4 primary partitions</u>. If you need more than 4 partitions you'll have to make at least one "extended" partition. <u>Extended</u> partitions are containers for "<u>logical</u>" partitions. Largest partition size is <u>2TB</u>.

- /
- /boot
- /var
- /home
- swap

A newer type of partition table is on the horizon named GPT. GPT eliminates a number of the restrictions of the MBR partition table. By default, GPT offers 128 partitions (more if desired) as

well as partitions > 2TB. For more information see: http://en.wikipedia.org/wiki/GUID Partition Table

Filesystems

- Types
 - ext2, ext3, ext4
 - swap
 - xfs
 - o reiser3
 - ntfs
 - vfat
 - o iso9660
 - ufs
 - zfs (Solaris), openzfs (BSDs, Linux, macOS), btrfs (Linux)
- Formating commands
 - o mkfs.*, mkfs.ext3, mkfs.ext4, etc
 - mkswap
 - mkfs.ntfs, mkfs.vfat
- Network filesystems
 - NFS
 - SMB
 - GFS
 - o Gluster, etc
 - iSCSI (layer 3) and AoE (layer 2)
- /etc/fstab (stores mount definitions)
- Removable media CD, DVD, USB Mostly automatic in a GUI, but manually in a TUI. Watch /var/log/messages for device information, use fdisk -l to list, and mount to manually mount
- UUID, LABEL, and device names
- autofs Automatically mount network shares
- Secure erasure? DBAN or hdparm
- fuse (Filesystem in Userspace)
 - http://en.wikipedia.org/wiki/Filesystem in Userspace
- Troubleshooting
 - SMART smartd
 - fsck, fsck.{fstype}, some filesystem-specific tools